

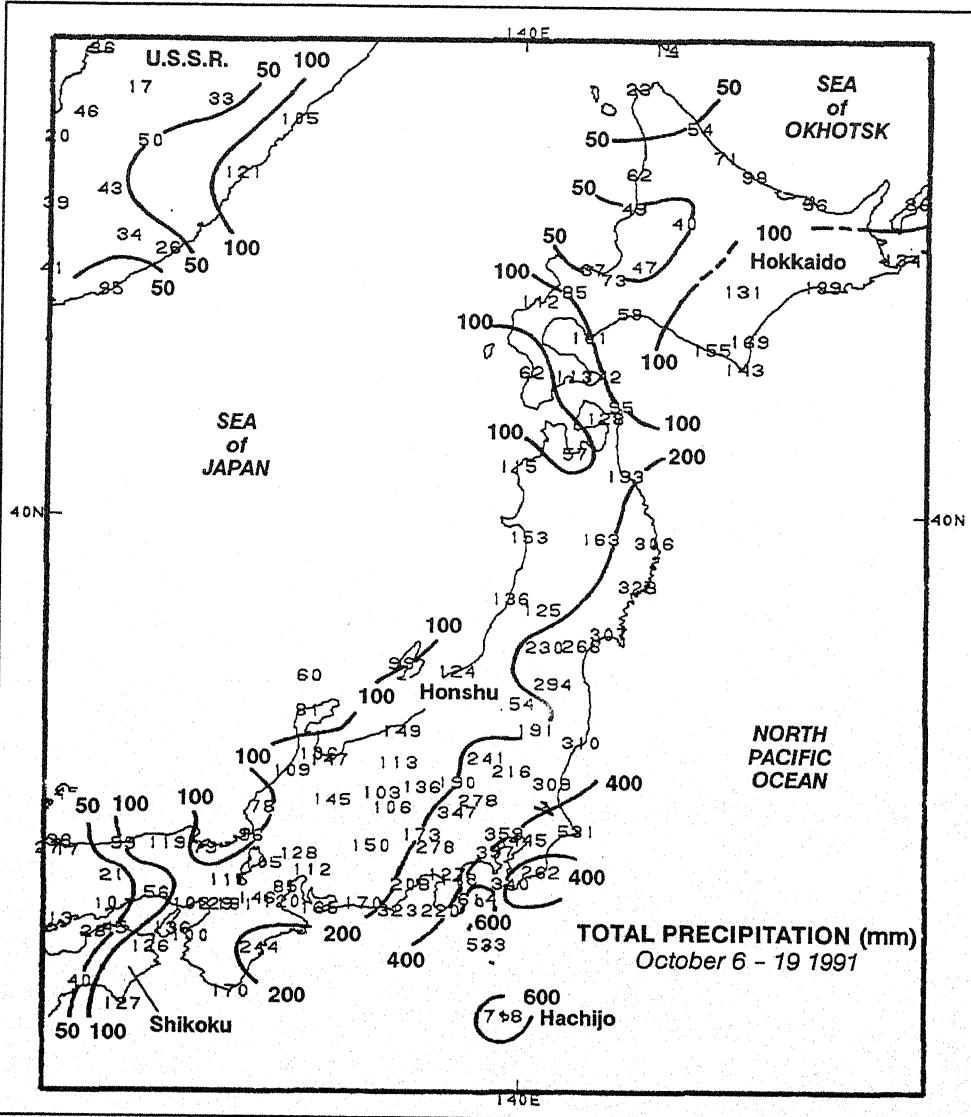
CONTAINS:  
SEPTEMBER 1991  
GLOBAL  
CLIMATE  
ANOMALIES

# WEEKLY CLIMATE BULLETIN

No. 91/42

Washington, DC

October 19, 1991



Very heavy rains of 200 - 600 mm (2 to 5 times the normal) have pounded eastern Honshu during the last two weeks, with totals exceeding 700 mm on a few offshore islands southeast of Tokyo. The southeastern third of Honshu received 90 - 190 mm during October 13 - 19 following torrential cloud bursts associated with Typhoon Orchid that dumped 150 - 400 mm on the region during the previous week. Most locations reported 150 - 425 mm above normal rainfall during October 6 - 19, 1991 as widespread flooding continued to plague Tokyo and eastern Honshu, according to press reports. Orchid is the seventh tropical cyclone to affect Japan since August 18.



UNITED STATES DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL WEATHER SERVICE-NATIONAL METEOROLOGICAL CENTER  
CLIMATE ANALYSIS CENTER



# WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- *Highlights of major climatic events and anomalies.*
- *U.S. climatic conditions for the previous week.*
- *U.S. apparent temperatures (summer) or wind chill (winter).*
- *Global two-week temperature anomalies.*
- *Global four-week precipitation anomalies.*
- *Global monthly temperature and precipitation anomalies.*
- *Global three-month precipitation anomalies (once a month).*
- *Global twelve-month precipitation anomalies (every three months).*
- *Global three-month temperature anomalies for winter and summer seasons.*
- *Special climate summaries, explanations, etc. (as appropriate).*

*Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.*

## STAFF

<b>Editor</b>	Tom Heddinghaus
<b>Associate Editor</b>	Richard Tinker
<b>Contributors</b>	Joe Harrison Paul Sabol David C. Stutzer
<b>Graphics</b>	Robert H. Churchill Alan Herman

*To receive copies of the Bulletin or to change mailing address, write to:*

Climate Analysis Center, W/NMC53  
Attn: WEEKLY CLIMATE BULLETIN  
NOAA, National Weather Service  
Washington, DC 20233

*For CHANGE OF ADDRESS, please include a copy of your old mailing label.*

Phone (301) 763-8071

## WEEKLY CLIMATE BULLETIN REQUESTS

Please ADD my address to your mailing list.  
 Please CHANGE my address on your mailing list.  
 Please DROP my address from your mailing list.

Name \_\_\_\_\_

Organization \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

# GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF OCTOBER 19, 1991

## 1. Western North America:

### **HOT DRY WEATHER ENGENDERS WILDFIRES.**

Little or no rain fell across the region as moisture deficits continue to grow. Since early September, shortfall of 50 - 300 mm have accumulated in the western portions of British Columbia, Oregon, and Washington [7 weeks]. In addition to the dryness, unseasonable warmth remained entrenched throughout the region as a number of daily record high temperatures were established in the Pacific Northwest on Tuesday [5 weeks]. The hot dry weather created ideal conditions for wildfires which have burned over 1,000 square kilometers in Washington, Oregon, Idaho, Montana, and Wyoming (see page 6). A number of houses were incinerated, including over a hundred homes in the Spokane, WA area. At week's end, a large fire broke out in the Oakland, CA area, threatening numerous buildings, including some on the University of California's Berkeley campus.

## 2. The Mid-Atlantic Coast, New England, and the Canadian Maritime Provinces:

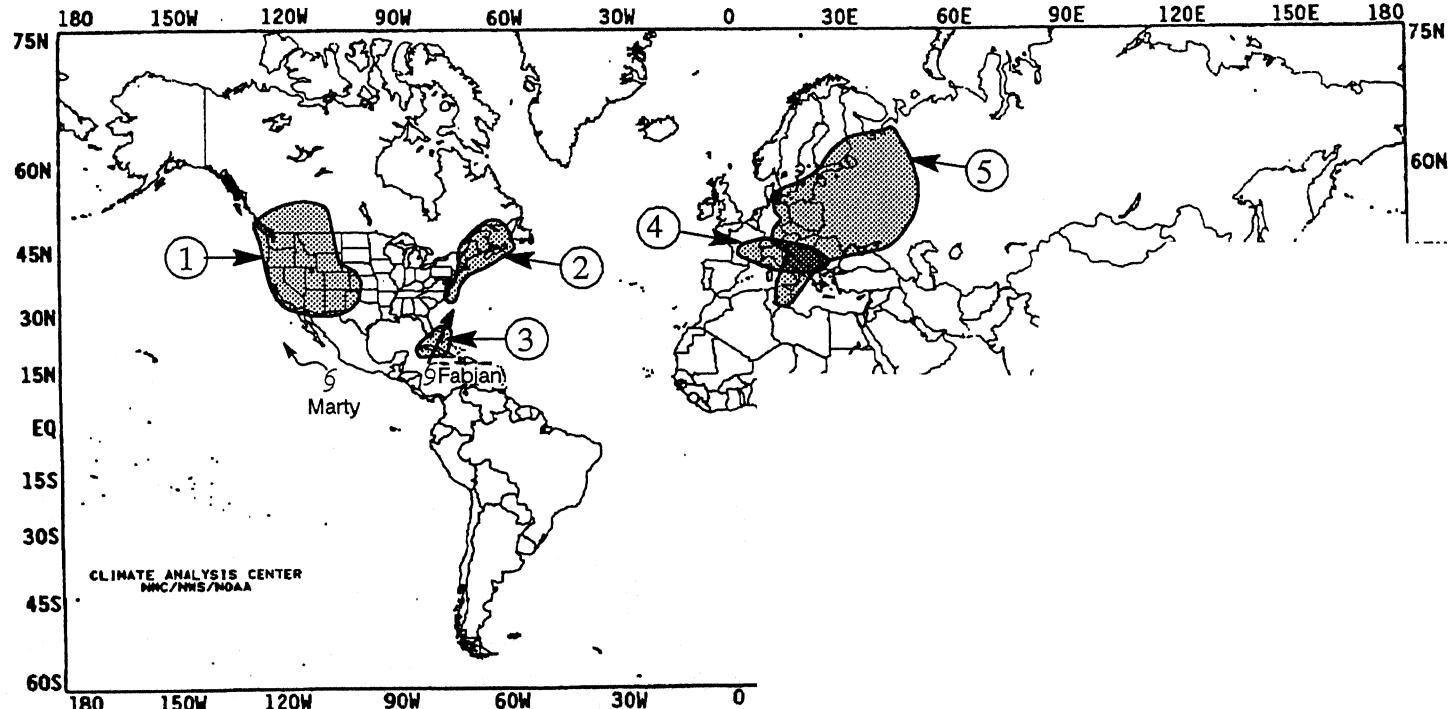
### **MORE RAIN DAMPENS REGION.**

A slow moving storm system, containing moisture from the remnants of Tropical Storm Fabian, spread moderate to heavy rains along the central and northern Atlantic coast. Amounts of 20 to 100 mm were reported from North Carolina to Maine while lighter amounts of 5 to 40 mm damped Nova Scotia, New Brunswick, and the St. Lawrence Valley [6 weeks].

## 3. Western Caribbean and southern Florida:

### **TROPICAL STORM FABIAN DRENCHES REGION.**

Weak but wet Tropical Storm Fabian (maximum sustained winds of 65 km/hr) doused central and western Cuba and southern Florida with heavy rains of 40 to 140 mm. The rains followed previous weeks with heavy rainfall, particularly in southern Florida where widespread flooding was reported. The heavy rainfall, however, was very beneficial for the Everglades, where some locations are still recovering from three exceptionally dry years [5 weeks].



## EXPLAN

TEXT: Approximate duration of anomalies is in brackets. Precipitation anomalies, 4 weeks.

MAP: Approximate locations of major anomalies and episodic extreme temperature anomalies, four week precipitation anomalies, 1 week.

# UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

## FOR THE WEEK OF OCTOBER 13 – 19, 1991

Unseasonably warm weather continued in the Far West for the fifth consecutive week with temperatures soaring above 90°F from Arizona to Oregon. In addition, little precipitation fell in the western U.S. as the warm and dry conditions promoted the rapid spread of over 100 wildfires in 5 states that charred more than 250,000 acres and destroyed over 100 homes and buildings. Wind gusts of 60 mph fanned the flames and blew down trees and power lines, igniting additional fires. Since September 1st some locations in the Pacific Northwest have received only a fraction of the normal rainfall. On Wednesday, the first measurable precipitation in 45 days was reported in Seattle, WA. The unseasonable warmth produced numerous record daily highs from the Great Plains to the Far West with some locations observing readings more than 20°F above normal. To the east, unseasonably cold conditions prevailed from Florida to North Dakota. Freezing temperatures dipped as far south as northern Georgia and over a dozen record lows were established from the northern Plains to the Deep South. Meanwhile, up to 4 inches of snow covered portions of the Midwest. Farther south, the 6th tropical storm of the season formed south of Florida, spreading up to 3 inches of rain over southern Florida. In Alaska, the first heavy snow of the season blanketed the Tanana and Yukon Valleys while over 7 inches of rain soaked the southeast. Heavy rain also drenched the Hawaiian islands with over a foot of precipitation measured on Oahu.

The week began with abnormally warm conditions enveloping the southern Plains to the West Coast. Over two dozen record daily highs were set from Louisiana to Washington with readings approaching the century mark in central Texas. Meanwhile, winter-like weather affected the upper Midwest and Great Lakes. Snow fell from northern Minnesota to northern Michigan along the northern portion of a cold front that trekked eastward. To the south, showers and thunderstorms developed along and ahead of the front as it pushed into the eastern U.S.

During the last half of the week, the cold front in the East slowly moved off the Atlantic coast. A secondary area of low pressure developed on the front off the North Carolina coast and eventually tracked along the Atlantic coast dumping over 3 inches of rain on portions of the mid-Atlantic. Meanwhile, unseasonably cold weather shifted slowly to the eastern third of the country. Numerous record daily lows were observed from the Ohio Valley to the Deep South on Wednesday and

Thursday with readings dipping into the thirties in northern Florida. In sharp contrast, unseasonable warmth overspread the nation west of the Mississippi Valley. Over 2 dozen record daily highs were established on Wednesday from the Great Plains to the Great Basin with readings topping 90°F as far north as South Dakota. El Paso, TX observed a high of 92°F on Friday the warmest reading for so late in a year. Toward the weekend, abnormally warm weather pushed eastward, producing record daily highs from the Mississippi Valley to the central Appalachians as readings soared into the eighties. To the north, a reinforcing shot of Canadian air moved into the central U.S., producing numbing cold in North Dakota with lows in the teens and heavy snow in the Midwest.

According to the River Forecast Centers, the greatest weekly totals (more than 2 inches) were limited to southern Florida, along the northern and mid-Atlantic coast, portions of the upper Midwest and northern Plains, most of southern Alaska and Hawaii, and scattered locations in central Florida, the Ohio Valley, and northern California (Table 1). Light to moderate amounts were measured across most of the nation east of the Mississippi Valley and central and the remainder of southern Alaska. Little or no precipitation occurred from the remainder of the Great Plains to the Far West, northern Alaska and eastern Hawaii.

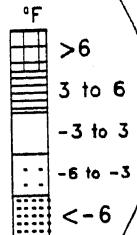
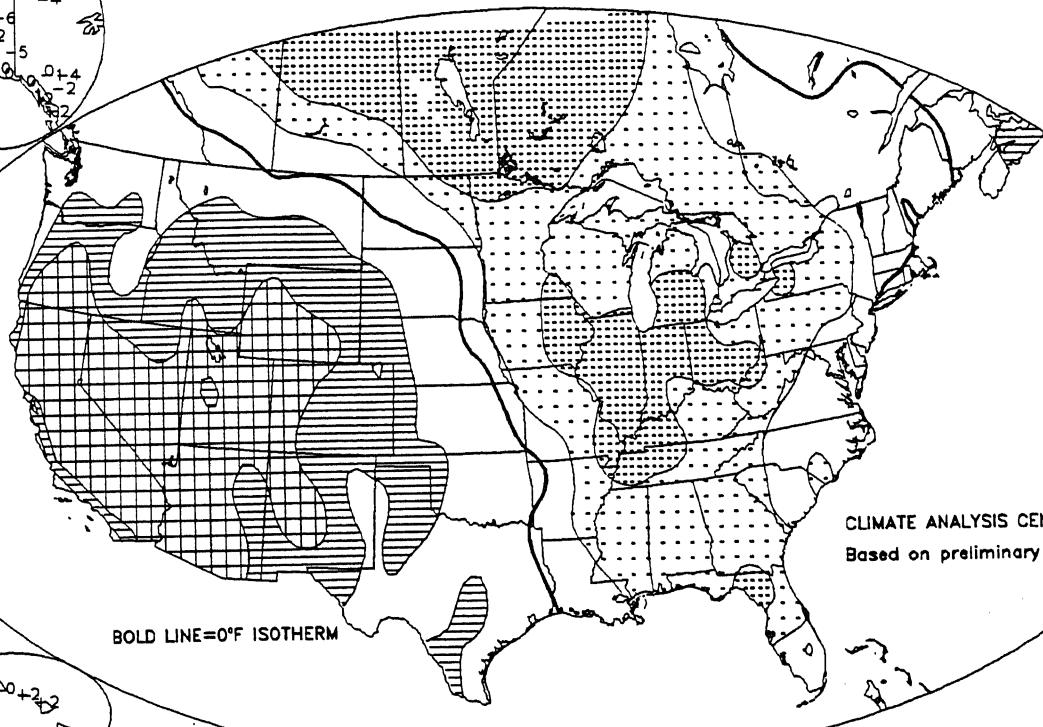
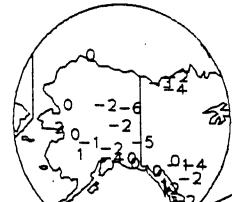
Unseasonably warm weather dominated the country west of the Great Plains (Table 2). Weekly departures between +8°F to +12°F were common across most of California, the Southwest, and Great Basin. Departures of +3°F to +7°F were observed in the High Plains, Rockies, and Pacific Northwest. Near to slightly above normal temperatures were common from southern Texas northward to eastern South Dakota, and along coastal central and southern California, the Northwest coast, and southern Maine. In Alaska, mild conditions were confined to the south with weekly departures of +4°F observed at King Salmon.

Unusually cold weather dominated from the Mississippi Valley to the East Coast (Table 3). Weekly departures of -5°F to -8°F were common in the upper Midwest, Great Lakes, Ohio and Tennessee Valleys, the Appalachians, and northern Florida. Departures between -2°F and -4°F were prevalent across the remainder of the eastern U.S. In Alaska, unseasonably cold conditions gripped the central and northern portions of the state with weekly departures between -2°F and -9°F.

**TABLE 1. SELECTED STATIONS WITH 2.00 OR MORE INCHES OF PRECIPITATION DURING THE WEEK OF OCTOBER 13 – 19, 1991**

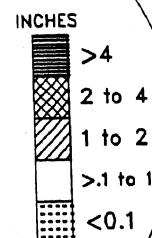
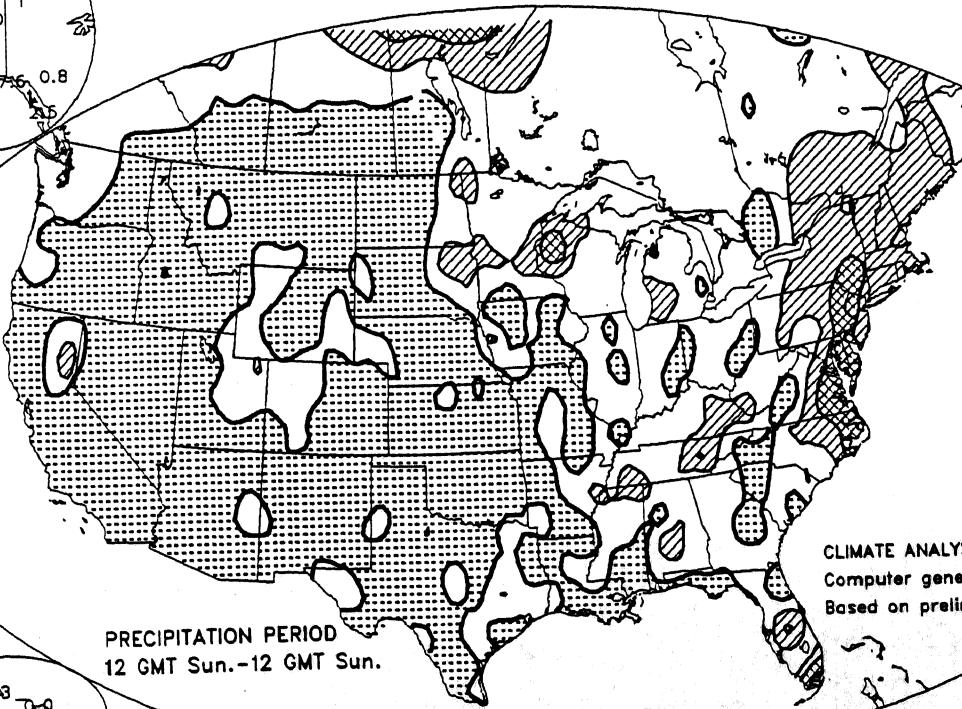
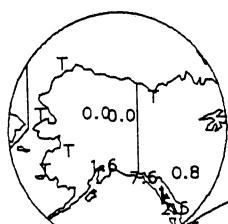
STATION	TOTAL (INCHES)	STATION	TOTAL (INCHES)
YAKUTAT, AK	7.58	CHATHAM, MA	2.50
ANNETTE ISLAND, AK	7.06	KEY WEST NAS, FL	2.49
ILIAMNA, AK	5.63	CORDOVA/MILE 13, AK	2.45
HOMESTEAD AFB, FL	5.39	VIRGINIA BEACH/OCEANA NAS, VA	2.41
NORFOLK, VA	3.34	DOVER AFB, DE	2.37
HONOLULU, OAHU, HI	3.34	BALTIMORE-WASHINGTON, MD	2.29
NORFOLK/CHAMBERS NDB, VA	3.17	NEW BERN, NC	2.21
SITKA, AK	3.14	NEWPORT NEWS/HENRY NDB, VA	2.20
LIHUE, KAUAI, HI	2.73	KEY WEST, FL	2.16
CAPE HATTERAS, NC	2.69	MIAMI, FL	2.14
COLD BAY, AK	2.61	PATUXENT RIVER NAS, MD	2.12
MT WASHINGTON, NH	2.55	HAMPTON/LANGLEY AFB, VA	2.03
VALDEZ, AK	2.52		

**OBSERVED PRECIPITATION**  
October 13 - 19, 1991



CLIMATE ANALYSIS CENTER, NOAA  
Based on preliminary data

**DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)**  
October 13 - 19, 1991



CLIMATE ANALYSIS CENTER, NOAA  
Computer generated isohyets  
Based on preliminary data

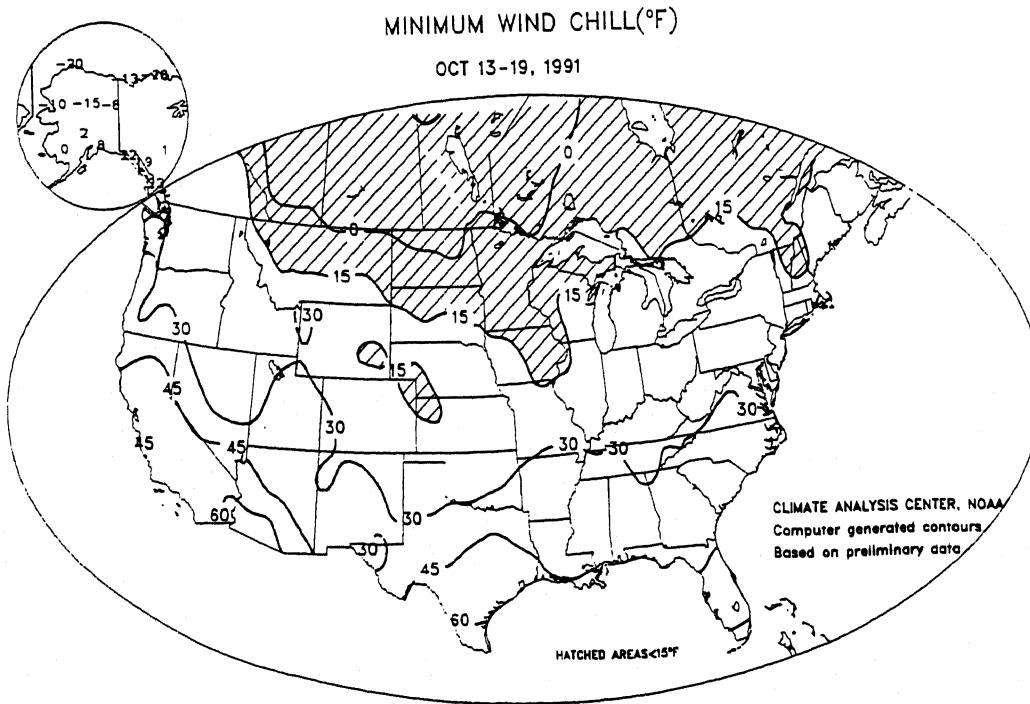
PRECIPITATION PERIOD  
12 GMT Sun.-12 GMT Sun.

**TABLE 2. SELECTED STATIONS WITH TEMPERATURES AVERAGING 8.0°F OR MORE ABOVE NORMAL FOR THE WEEK OF OCTOBER 13 – 19, 1991**

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
VICTORVILLE/GEORGE AFB, CA	+14.9	75.9	YUMA, AZ	+9.9	86.2
BLUE CANYON, CA	+14.6	68.8	FLAGSTAFF, AZ	+9.9	57.0
RENO, NV	+11.8	62.0	PASO ROBLES, CA	+9.8	71.9
PHOENIX, AZ	+11.7	85.2	MARYSVILLE/YUBA CO, CA	+9.5	74.3
DAGGETT, CA	+11.6	80.6	SEXTON SUMMIT, OR	+9.3	60.2
RED BLUFF, CA	+11.2	76.4	UKIAH, CA	+9.2	71.0
FRESNO, CA	+11.0	75.9	BAKERSFIELD, CA	+9.1	77.2
SAN BERNARDINO/NORTON, CA	+10.9	76.2	SACRAMENTO, CA	+9.1	73.1
PREScott, AZ	+10.5	65.6	TUCSON/DAVIS-MONTHAN AFB, AZ	+8.7	77.7
LAS VEGAS, NV	+10.4	78.1	TUCSON, AZ	+8.6	79.0
MT SHASTA, CA	+10.4	61.8	LOELOCK, NV	+8.3	60.3
ROCK SPRINGS, WY	+10.2	55.2	PRICE, UT	+8.2	59.6
STOCKTON, CA	+10.1	74.5	BURBANK/HOLLYWOOD, CA	+8.1	73.9
GLENDALE/LUKE AFB, AZ	+10.0	80.9	HELENA, MT	+8.1	53.4
TONOPAH, NV	+10.0	63.0			

**TABLE 3. SELECTED STATIONS WITH TEMPERATURES AVERAGING 6.5°F OR MORE BELOW NORMAL FOR THE WEEK OF OCTOBER 13 – 19, 1991**

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
GULKANA, AK	-9.2	18.5	FLINT, MI	-6.9	43.7
WARROAD, MN	-8.4	35.9	SPRINGFIELD, IL	-6.8	49.2
CEDAR RAPIDS, IA	-8.1	45.2	BLYTHEVILLE AFB, AR	-6.8	56.4
JACKSON, MI	-7.4	44.1	ESCENABA, MI	-6.7	41.0
CHAMPAIGN, IL	-7.3	48.5	CHICAGO/MIDWAY, IL	-6.7	48.1
BURLINGTON, IA	-7.2	48.6	ROCHESTER, MN	-6.6	42.4
GRAND RAPIDS, MI	-7.1	44.2	SAGINAW, MI	-6.6	43.9
ROCKFORD/GREATER, IL	-7.1	45.0	MT CLEMENS/SELFRIIDGE, MI	-6.6	45.6
CHICAGO/O'HARE, IL	-7.1	46.4	PEORIA, IL	-6.6	47.3
PARKERSBURG/WOOD CO, WV	-7.1	48.6	POPLAR BLUFF, MO	-6.6	53.9
DECATUR, IL	-7.0	49.6	PARK FALLS, WI	-6.5	39.7
FT YUKON, AK	-6.9	14.2	JACKSON, TN	-6.5	54.7
LANSING/CAPITAL CITY, MI	-6.9	43.3			

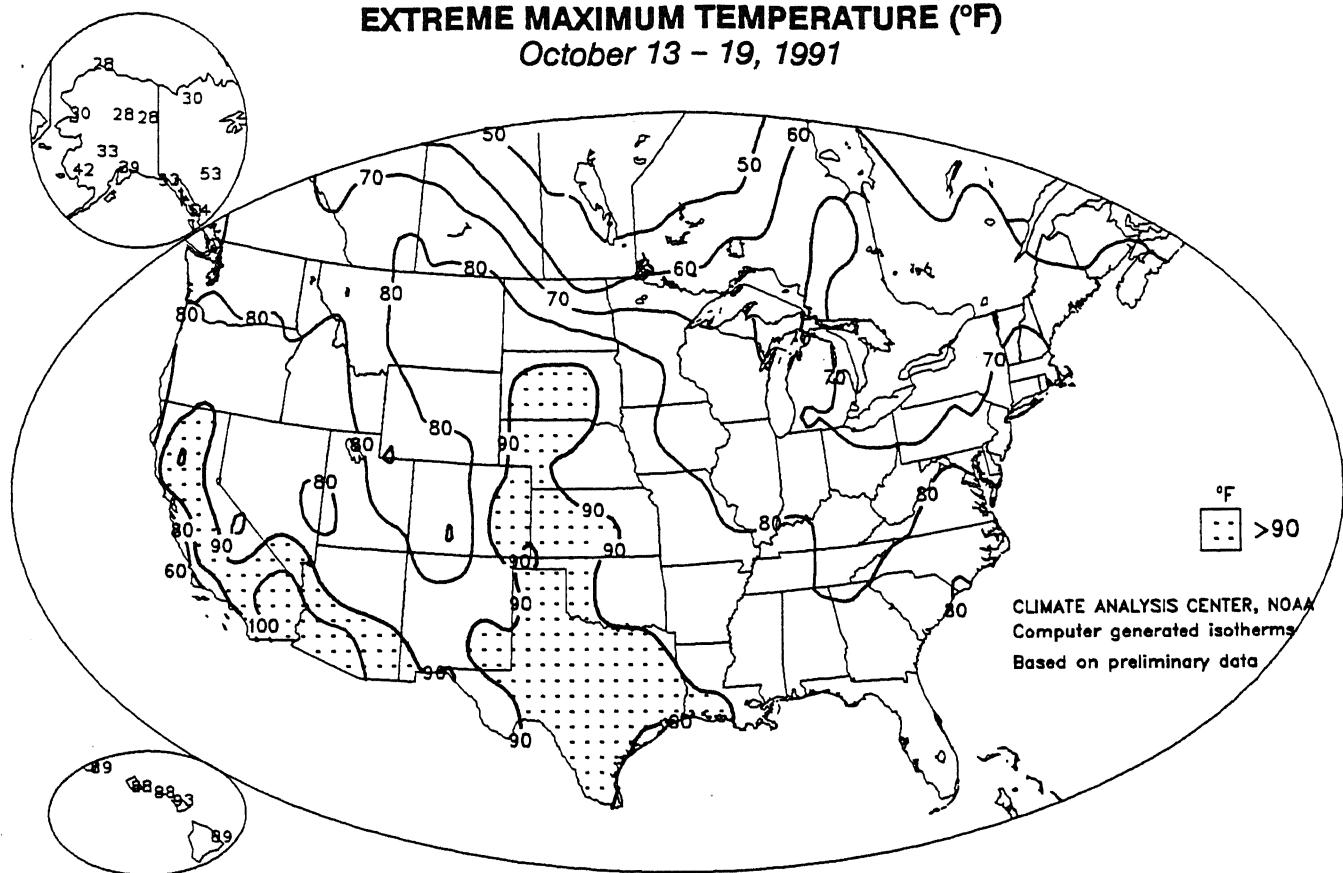


**FIGURE 1.**

*Breezy conditions accompanied low temperatures, producing the season's first widespread subzero wind chills across northern North Dakota and Canada's Prairie Provinces. Wind chills dropped below 30°F as far south as the Texas Panhandle and Delmarva Peninsula*

## EXTREME MAXIMUM TEMPERATURE (°F)

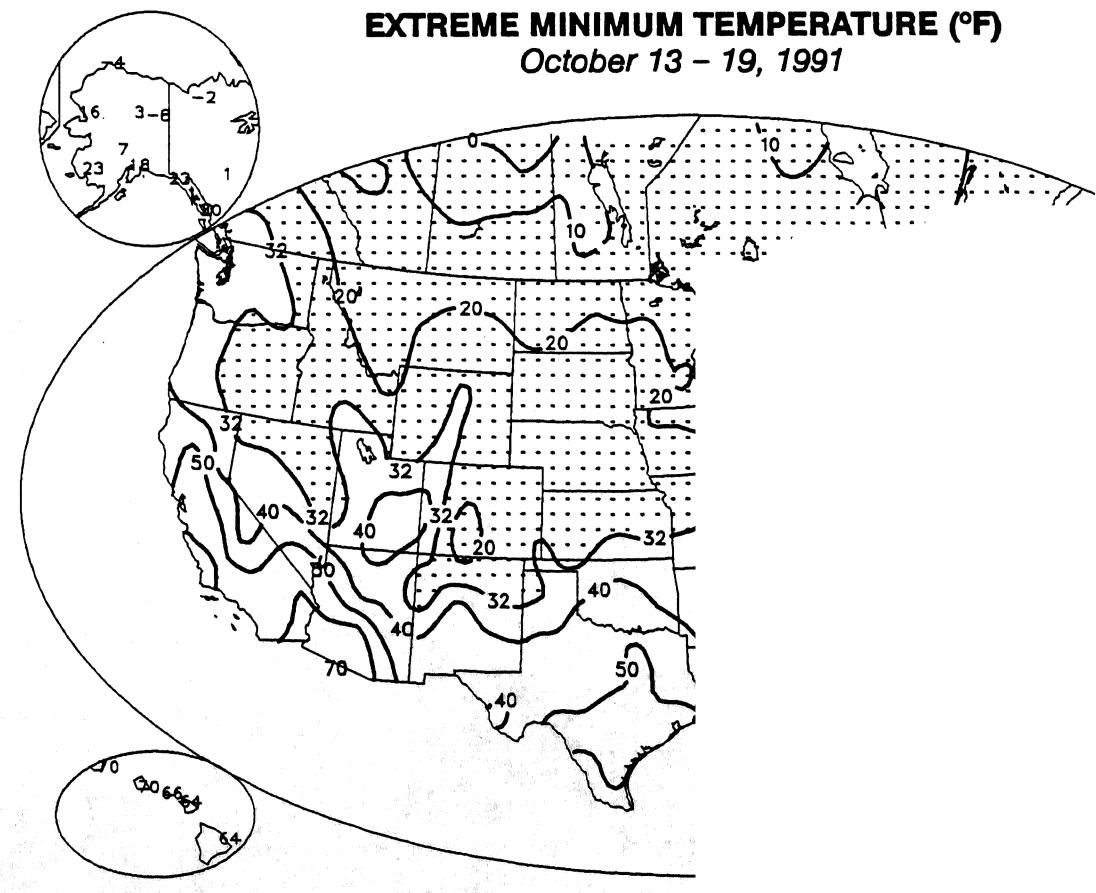
October 13 - 19, 1991



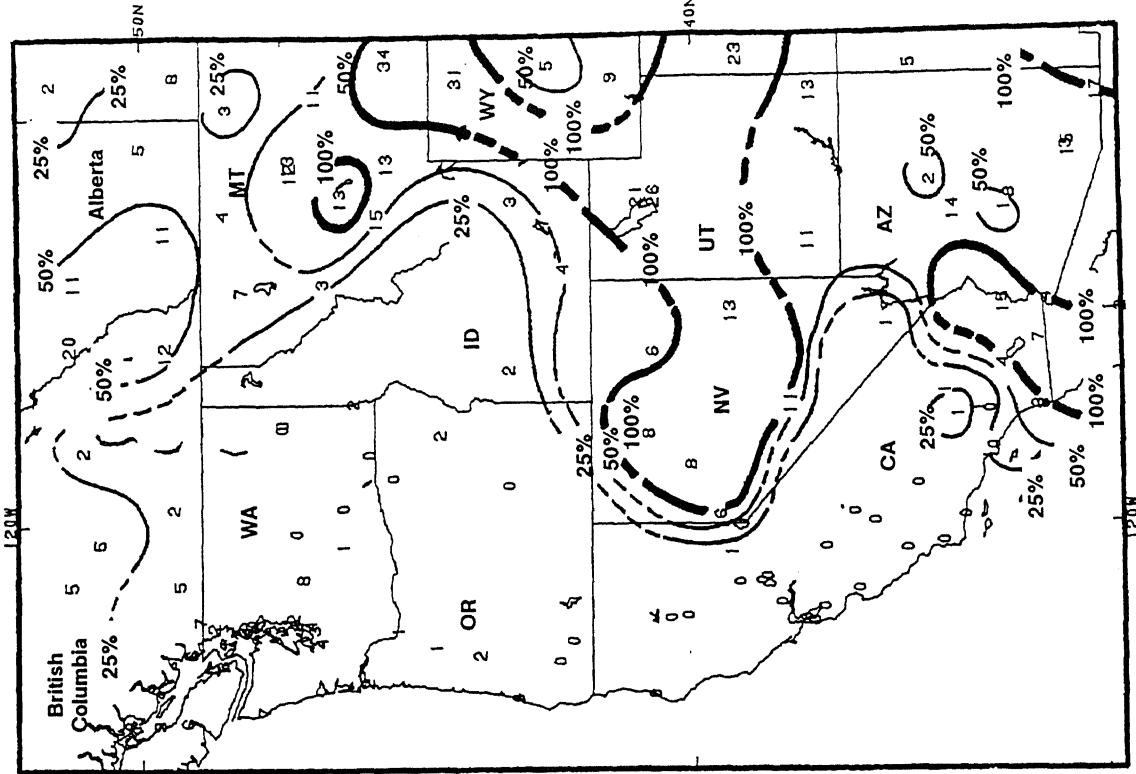
Unseasonable warmth persisted in the western half of the nation as highs into the nineties reached as far north as northern California and northern South Dakota (top). In contrast, abnormally cool weather remained east of the Mississippi River, where temperatures dropped below freezing as far south as the Tennessee Valley (bottom).

## EXTREME MINIMUM TEMPERATURE (°F)

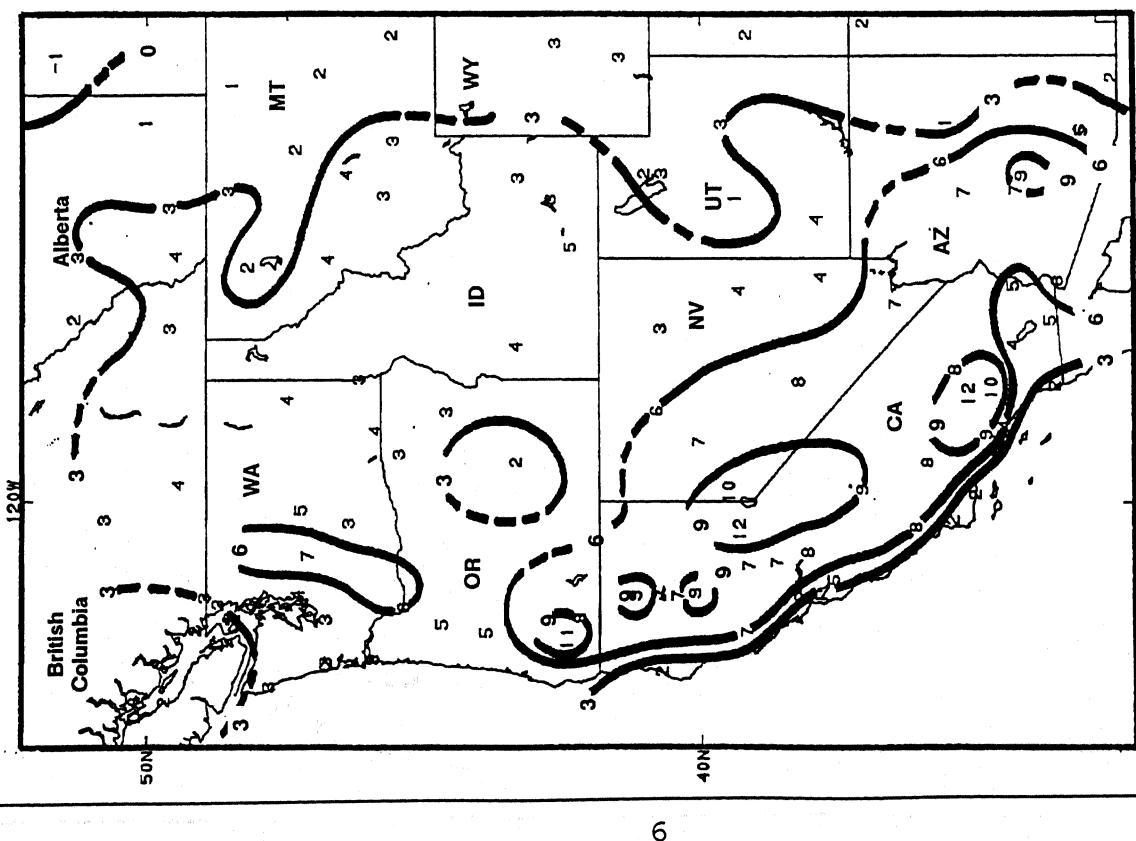
October 13 - 19, 1991



# GLOBAL CLIMATE HIGHLIGHTS



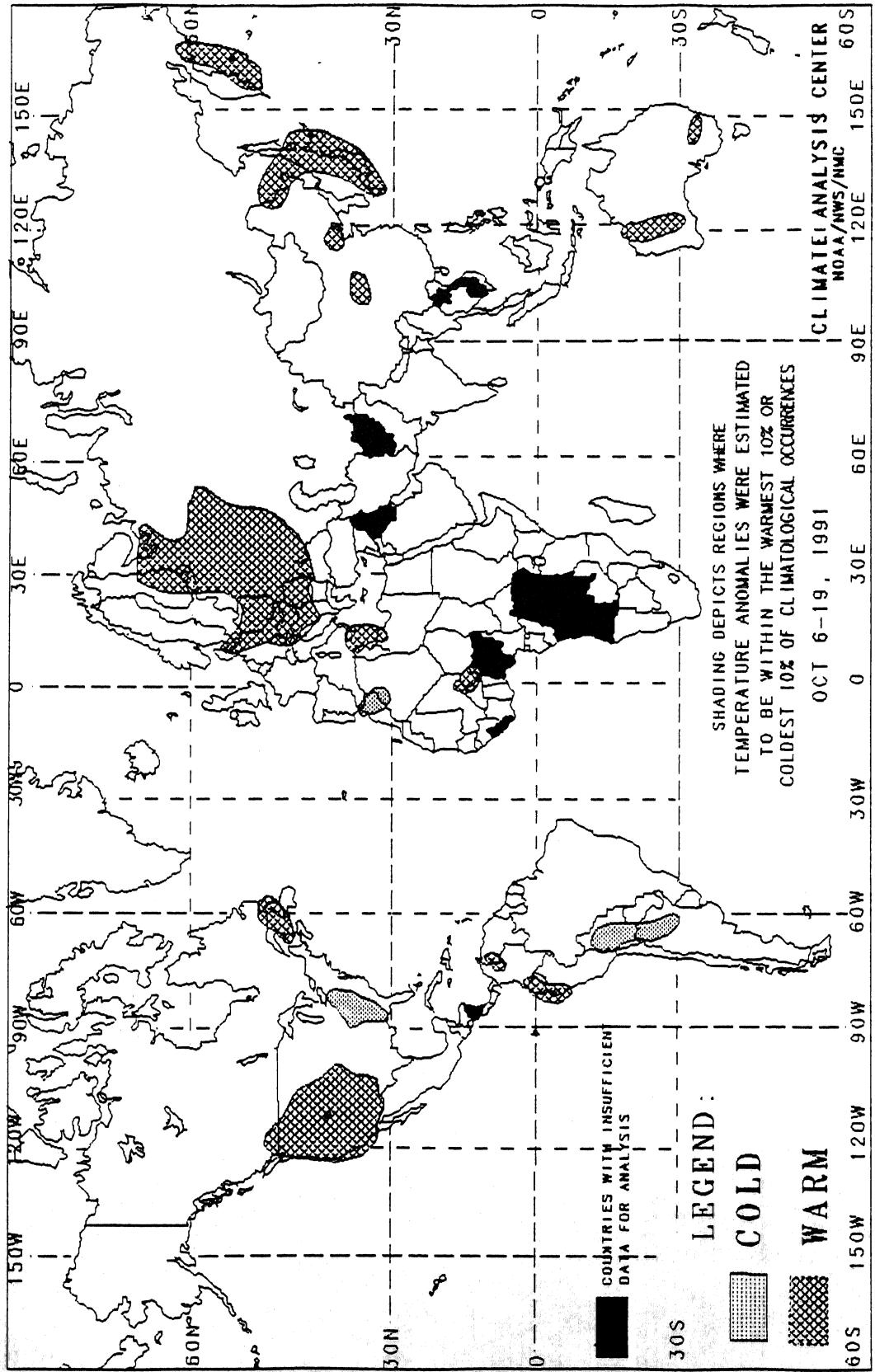
Unreasonable warmth has persisted in the Far West for the last five weeks. Temperatures averaged more than 9°F above normal during September 15 - October 19, 1991 in interior California and southwestern Oregon (left). In addition, very little rain has fallen on most of the Far West since early September. Only a few tenths of an inch, if any, has moistened most locations in California, northern Nevada, Oregon, Washington, Idaho, and western Wyoming (right). The combination of warm and dry weather has created ideal conditions for wildfires. As of October 19, very large fires had ravaged portions of the Pacific Northwest and northern Rockies. Fires burned 200,000 acres in Montana, 5,000 acres in northern Idaho, 8,000 acres in Oregon's Willamette National Forest, and 2,300 acres in northwestern Wyoming, according to press reports. In Washington, 34 fires charred 43,000 acres and 100 homes near Spokane. On October 20 and 21, wind-driven fires roared through portions of the Oakland, CA area, taking at least 14 lives and destroying more than 1,000 homes. Nearly 1,500 acres were also burned in Sonoma County north of the San Francisco Bay area.



**LEFT:** Departure from Normal Average Temperature (°F), September 15 - October 19, 1991. Isopleths drawn for 0°F, 3°F, 6°F, and 9°F. At least 30 days (95%) required for inclusion. **RIGHT:** Total Precipitation (0.1", e.g., 3 = 0.3") plotted, Percent of Normal Precipitation analyzed, September 1 - October 19, 1991. Isopleths drawn for 100%, 50%, and 25%. At least 47 days (95%) required for inclusion.

## 2-WEEK GLOBAL TEMPERATURE ANOMALIES

OCTOBER 6-19, 1991



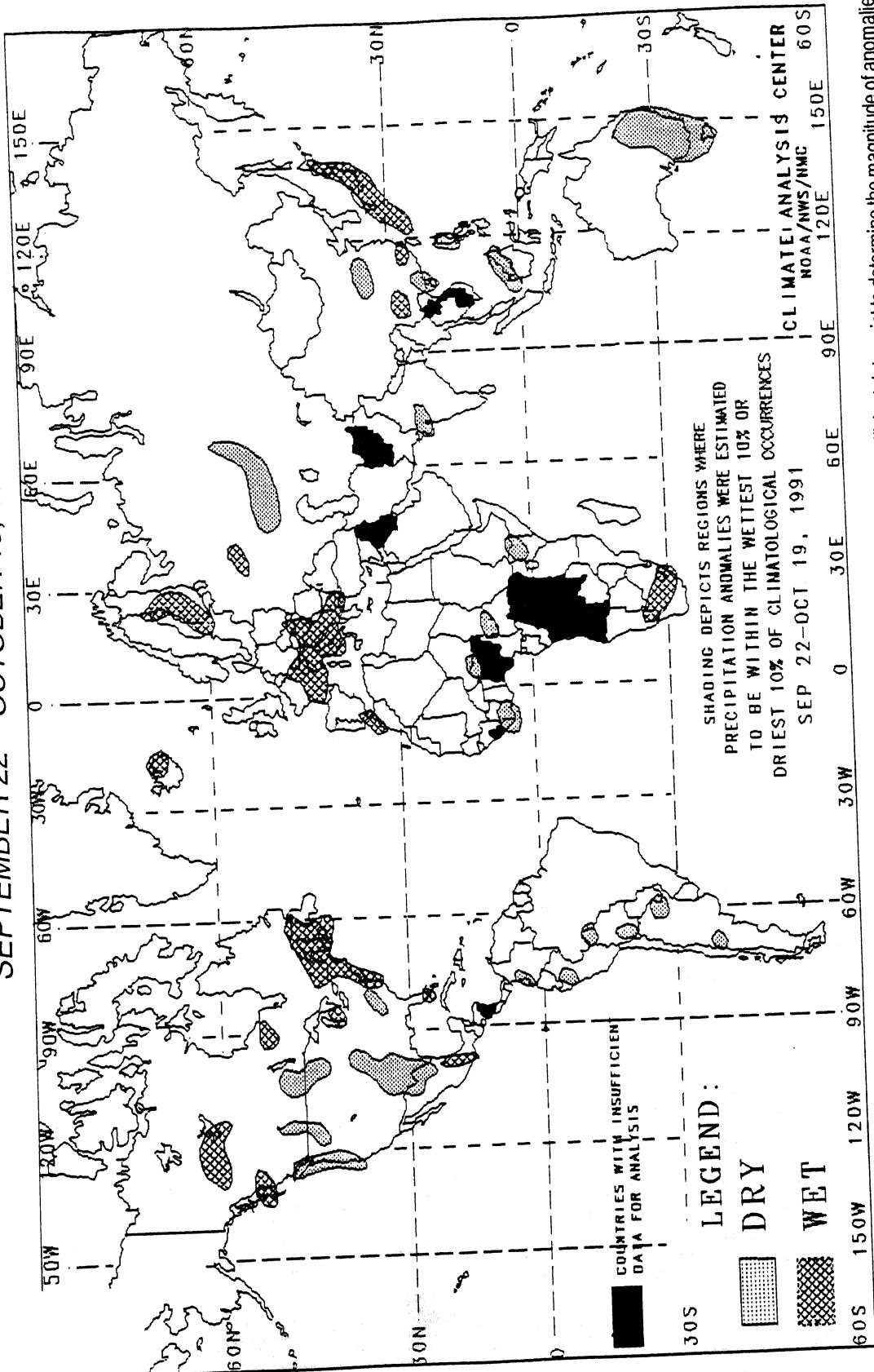
The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

## 4-WEEK GLOBAL PRECIPITATION ANOMALIES

SEPTEMBER 22 - OCTOBER 19, 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

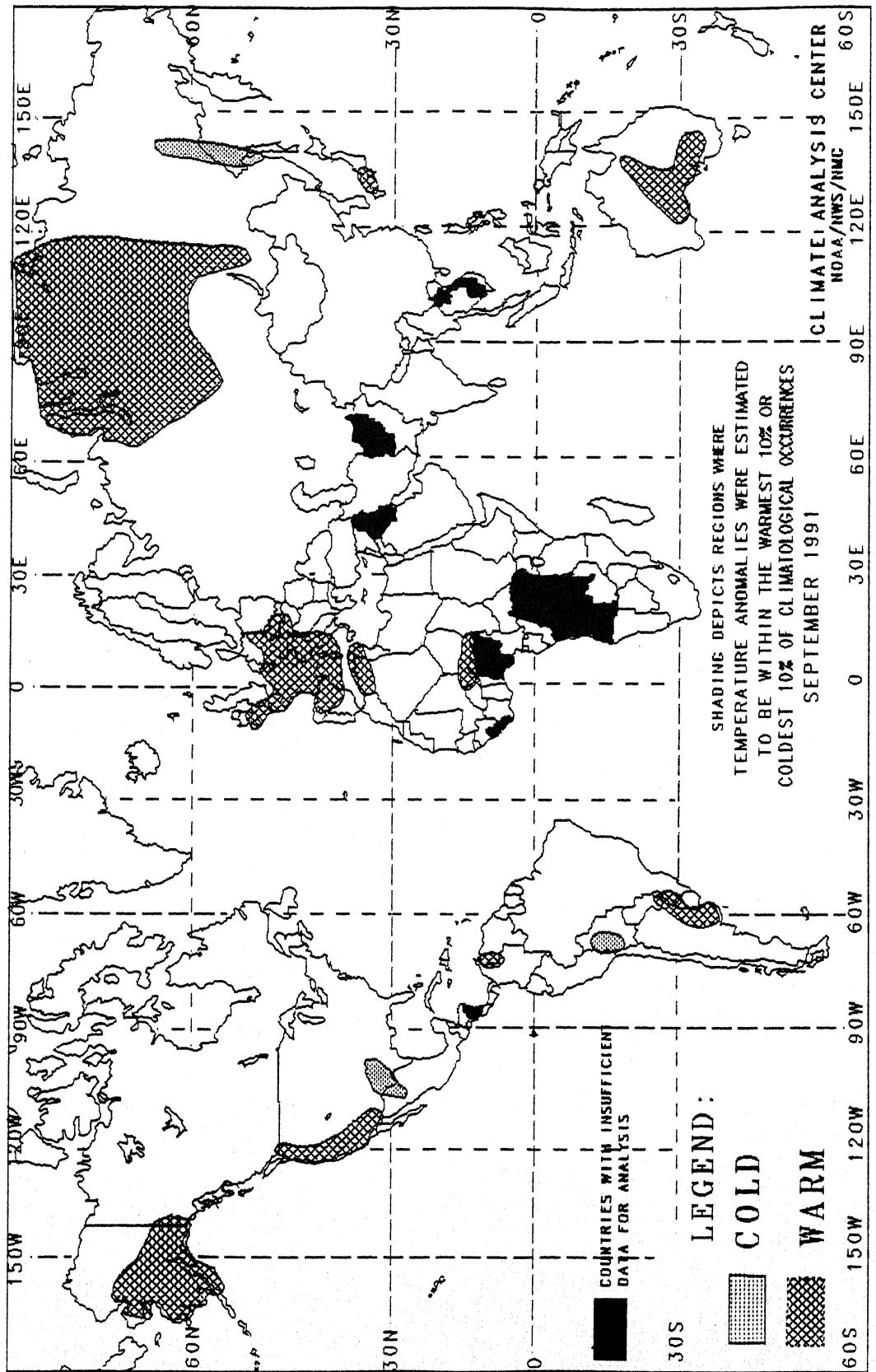
In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

# MONTHLY GLOBAL TEMPERATURE ANOMALIES

SEPTEMBER 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 26 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of one month temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

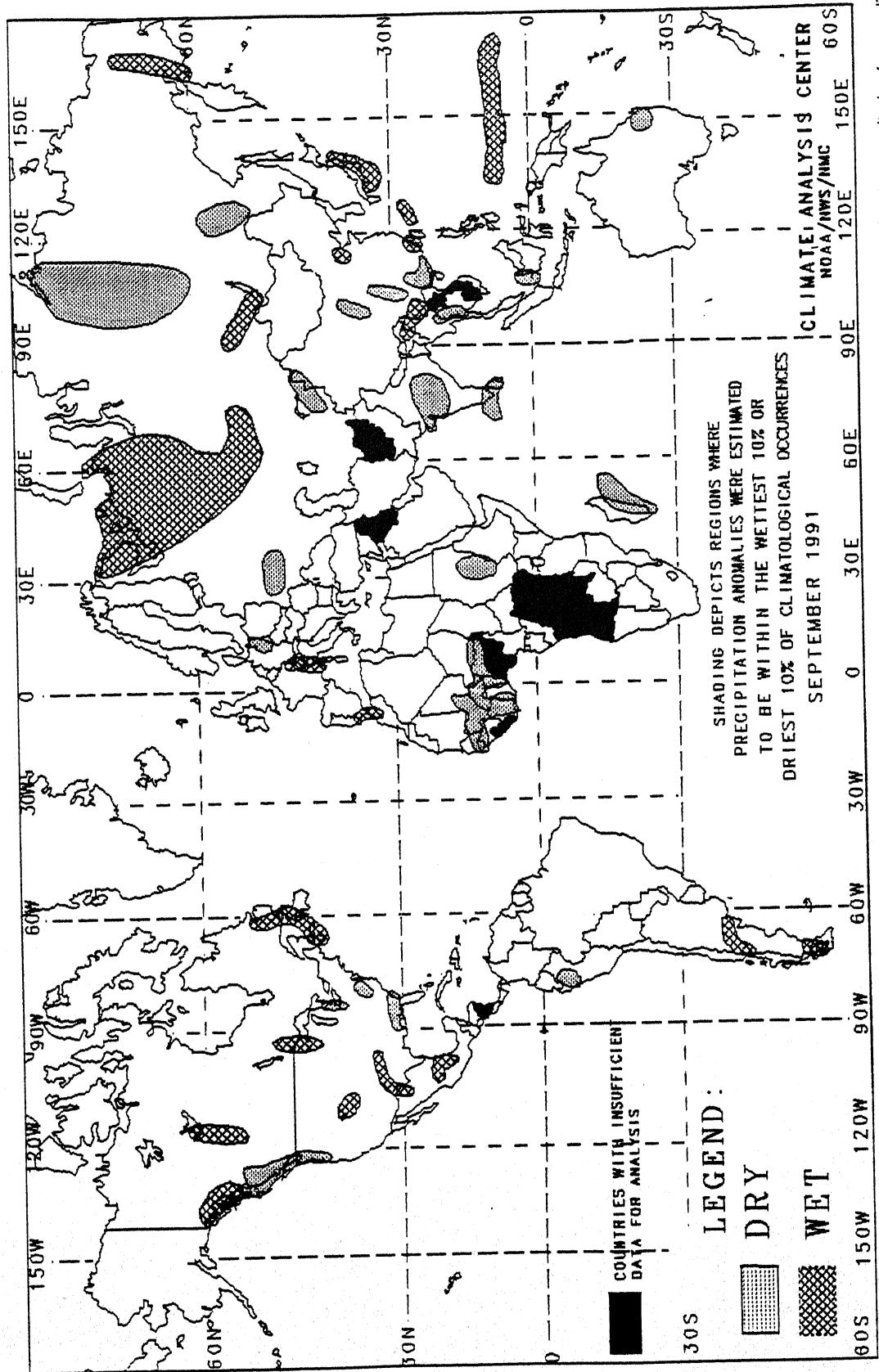
# PRINCIPAL TEMPERATURE ANOMALIES

SEPTEMBER 1991

REGIONS AFFECTED	TEMPERATURE AVERAGE (°C)	DEPARTURE FROM NORMAL (°C)	COMMENTS
<b>NORTH AMERICA</b>			
Alaska	+8 to +11	+2 to +3	Very warm second half of September
Western United States	+17 to +31	+2 to +3	Very warm second half of September
South-Central United States	+20 to +22	-2 to -3	Very cool second half of September
<b>SOUTH AMERICA AND EASTERN PACIFIC</b>			
Western Venezuela	+22 to +30	Around +2	Very warm first half of September
West-Central Bolivia	+6 to +26	-2 to -4	Very cool first half of September
East-Central South America	+12 to +21	+2 to +3	Very warm first half of September
<b>EUROPE AND THE MIDDLE EAST</b>			
Western and Central Europe	+2 to +25	+2 to +4	WARM - 2 to 11 weeks
<b>AFRICA</b>			
Northern Algeria and Northern Tunisia	+25 to +26	Around +2	WARM - 2 to 9 weeks
Southern Niger	+30 to +31	+2 to +3	WARM - 5 to 8 weeks
<b>ASIA</b>			
Central Siberia	+1 to +11	+2 to +5	WARM - 4 to 18 weeks
Eastern Siberia	-1 to +9	-2 to -3	COLD - 5 weeks
Western Japan	+25 to +26	+2 to +3	WARM - 2 to 18 weeks
<b>AUSTRALIA AND WESTERN PACIFIC</b>			
Central Australia	+16 to +25	+2 to +3	WARM - 2 to 4 weeks

# MONTHLY GLOBAL PRECIPITATION ANOMALIES

SEPTEMBER 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the one month period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies must be used in relating it to local conditions, especially in mountainous regions.

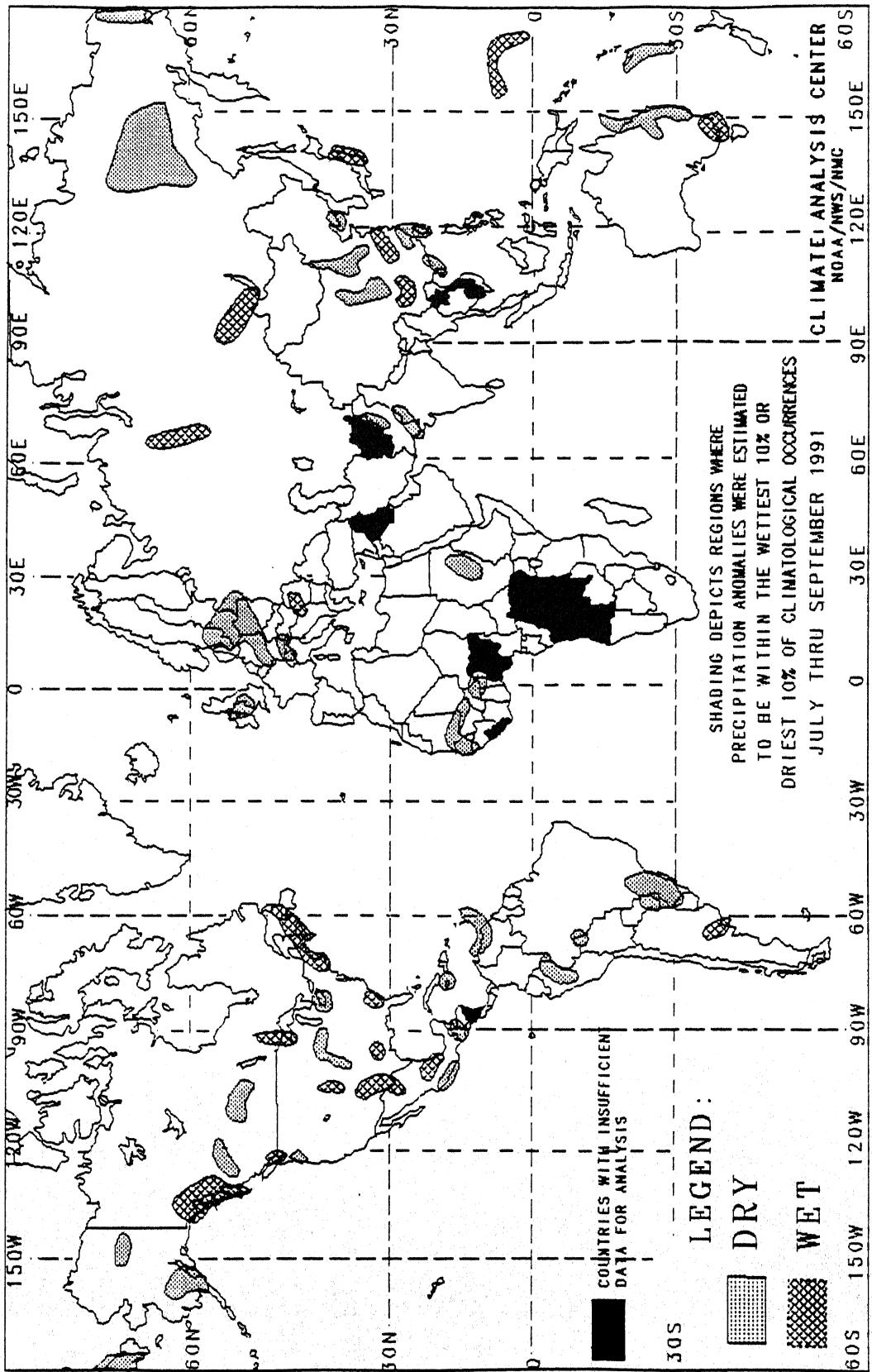
# PRINCIPAL PRECIPITATION ANOMALIES

SEPTEMBER 1991

LOCATIONS AFFECTED	PRECIPITATION TOTAL (MM)	PERCENT OF NORMAL	COMMENTS
<b>NORTH AMERICA</b>			
Eastern Alaska and Adjacent Canada	83 to 1078	161 to 269	WET - 2 to 5 weeks
Southern Alberta	80 to 127	209 to 298	Heavy precipitation first half of September
British Columbia and Pacific Northwest Coasts	0 to 66	0 to 50	DRY - 5 to 10 weeks
Minnesota and Adjacent Canada	138 to 238	207 to 289	WET - 2 to 7 weeks
Canadian Maritime Provinces	134 to 201	159 to 187	WET - 2 to 8 weeks
Eastern Michigan and Northwestern Ohio	16 to 19	27 to 30	DRY - 4 to 6 weeks
Wyoming and Colorado	58 to 65	293 to 337	Heavy precipitation first half of September
Southern Virginia	4 to 6	5 to 7	DRY - 5 weeks
South-Central United States and Adjacent Mexico	103 to 301	234 to 345	WET - 5 to 10 weeks
Southeastern United States	9 to 48	7 to 29	DRY - 5 to 10 weeks
Central Mexico	123 to 617	221 to 287	WET - 4 to 8 weeks
<b>SOUTH AMERICA AND EASTERN PACIFIC</b>			
South-Central Peru	0 to 50	0 to 1	DRY - 13 to 14 weeks
Central Argentina	55 to 122	222 to 406	WET - 2 to 4 weeks
Southern Chile and Southern Argentina	62 to 68	217 to 257	Heavy precipitation second half of September
<b>EUROPE AND THE MIDDLE EAST</b>			
Southern European Soviet Union	46 to 125	161 to 284	WET - 4 to 5 weeks
South-Central Germany	Around 14	29 to 31	DRY - 9 weeks
Southern Ukraine	6 to 7	14 to 16	DRY - 5 to 9 weeks
Western France and Western Switzerland	137 to 382	236 to 276	Heavy precipitation second half of September
Southern Spain	43 to 71	214 to 364	Heavy precipitation second half of September
<b>AFRICA</b>			
Southern Morocco	54 to 65	364 to 697	Heavy precipitation second half of September
Central Region	4 to 134	9 to 57	DRY - 4 to 10 weeks
Kenya	0 to 55	0 to 42	DRY - 5 to 10 weeks
Madagascar Island and Off-Shore Indian Ocean Islands	4 to 43	6 to 46	DRY - 4 to 7 weeks
<b>ASIA</b>			
North-Central Siberia	4 to 6	12 to 17	DRY - 6 weeks
South-Central Siberia	22 to 24	30 to 31	DRY - 5 weeks
Eastern Siberia	52 to 96	198 to 284	Heavy precipitation early and late September
North-Central Siberia	79 to 80	174 to 189	WET - 4 to 5 weeks
Western Kazakhstan and Adjacent China	1 to 3	5 to 12	DRY - 6 to 10 weeks
North-Central China	4 to 21	11 to 26	DRY - 9 to 10 weeks
Central China	41 to 48	23 to 44	DRY - 7 to 10 weeks
South-Central China	88 to 121	278 to 348	WET - 4 to 5 weeks
Southwestern China	220 to 459	155 to 202	WET - 2 to 4 weeks
South-Central China	3 to 97	3 to 44	DRY - 6 to 9 weeks
South-Central China	267 to 325	244 to 248	Heavy precipitation first half of September
South-Central China	484 to 560	254 to 291	WET - 2 to 5 weeks
South-Central China	381 to 714	191 to 231	WET - 4 weeks
South-Central China	66 to 130	27 to 50	DRY - 5 to 6 weeks
South-Central China	4 to 17	4 to 8	DRY - 7 to 18 weeks
South-Central India	1 to 16	2 to 9	DRY - 6 to 9 weeks
Sri Lanka and Extreme Southern India			
<b>AUSTRALIA AND WESTERN PACIFIC</b>			
Tonga	96 to 133	41 to 49	DRY - 4 to 5 weeks
Caroline Islands and Marshall Islands	472 to 986	140 to 250	WET - 4 weeks
South-Central Australia	0 to 1	Around 1	DRY - 14 weeks

# 3-MONTH GLOBAL PRECIPITATION ANOMALIES

JULY - SEPTEMBER 1991

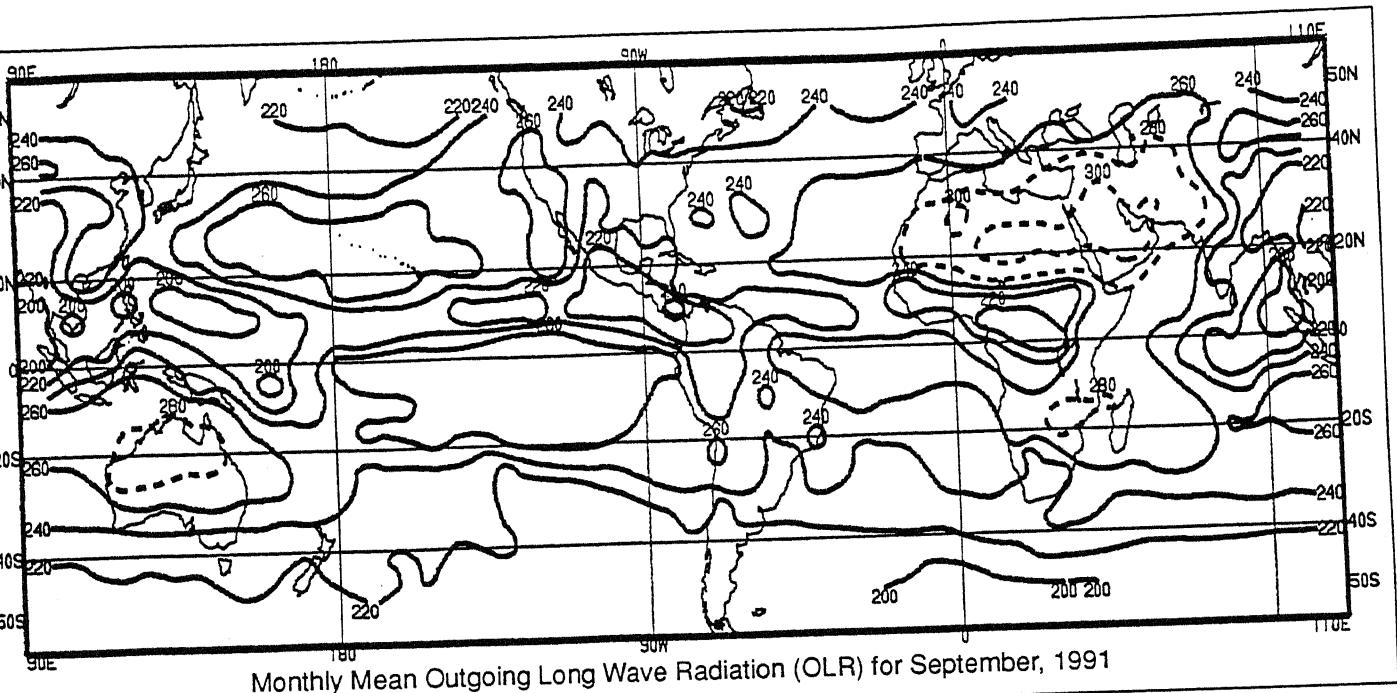


The anomalies on this chart are based on approximately 2500 observing stations for which at least 81 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the three month period is less than 50 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total three month precipitation exceeds 125 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of three month precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.



## **EXPLANATION**

The mean monthly outgoing long wave radiation (OLR) as measured by the NOAA-9 AVHRR IR window channel by NESDIS/SRL (top). Data are accumulated and averaged over  $2.5^{\circ}$  areas to a  $5^{\circ}$  Mercator grid for display. Contour intervals are  $20 \text{ W m}^{-2}$ , and contours of  $280 \text{ W m}^{-2}$  and above are dashed. In tropical areas (for our purposes  $20^{\circ}\text{N}$  –  $20^{\circ}\text{S}$ ) that receive primarily convective rainfall, a mean OLR value of less than  $200 \text{ W m}^{-2}$  is associated with significant monthly precipitation, whereas a value greater than  $260 \text{ W m}^{-2}$  normally indicates little or no precipitation. Care must be used in interpreting this chart at higher latitudes, where much of the precipitation is non-convective, or in some tropical coastal or island locations, where precipitation is primarily orographically induced. The approximate relationship between mean OLR and precipitation amount does not necessarily hold in such locations.

The mean monthly outgoing long wave radiation anomalies (bottom) are computed as departures from the 1979 – 1988 base period mean. Contour intervals are  $15 \text{ W m}^{-2}$ , while positive anomalies (greater than normal OLR, suggesting less than normal cloud cover and/or precipitation) are solid, dashed and negative anomalies (less than normal OLR, suggesting greater than normal cloud cover and/or precipitation) are solid.

